Foetal echocardiography as a routine antenatal screening tool

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Background: Congenital heart defects (CHDs) are the most common forms of congenital anomalies found in humans.Prenatal diagnosis of CHDs helps in saving the life of the baby as well as helps in smooth transition between pre and post natal states. Studies have shown that prenatal diagnosis improves neonatal survival after surgical repair compared to post natal diagnosis.Foetal echocardiography when performed increases the rate of detection of CHDs to 85 to 90%.
Aims: The present study is conducted to find out the incidence of CHDs in an unselected population of pregnant women and the association of risk factors with occurrence of CHDs.
Methods: The study subjects included all pregnant women who attended our antenatal unit between 2008 and 2012. All women were eligible including those without any known risk factors for CHD. They were categorized into two groups - high risk and low risk. Detailed fetal echocardiography was done.
Results: A total of 1280 pregnant women were included in study.118 women had known risk factors for CHDs and were categorized as the high risk group while remaining 1162 were included in the low risk group. 26 cases of CHDs were detected based on abnormal foetal echocardiography. Therefore, the incidence of prenatally diagnosed CHD in our study is 20.3 per 1000. Only 2 of the 26 cases of CHD occurred in high risk group whereas the remaining 24 occurred in low risk pregnancy. The difference in the incidence of CHDs between the two groups was not significant statistically (p=0.76). Therefore, our study shows that there is no difference in incidence of CHDs between pregnancies associated with high risk factors compared to low risk pregnancies.
Conclusion: Foetal echocardiography should be included as a part of routine antenatal screening and all pregnant women should be subjected to foetal echocardiography irrespective of risk factors for CHDs.

Hemodynamic impact of significant LAD disease on coronary sinus flow velocity

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Background: Patients with significant coronary artery disease involving left coronary system having reduced TIMI flow are assumed to have decreased Coronary sinus flow velocity. However this has not been studied extensively in the past. The Doppler echocardiographic evaluation of coronary sinus is required to assess the coronary sinus flow velocity.
Aim: The aim of the study is to determine the coronary sinus flow velocity by transthoracic echocardiography in patients with critical LAD disease and compared with patients with normal epicardial coronaries.
Methods: 15 patients with angiographically proven LAD disease of >70% done in the cath lab of RGGGH, Madras Medical College, Chennai were selected for the study. The controls (15 patients) were selected from patients with normal coronaries. The coronary sinus peak flow velocities were assessed using Pulsewave Doppler echocardiography in parasternal long axis inflow view.
Results: Out of the 15 CAD patients, 11 were males and 4 were females. 6 patients had LV dysfunction with EF < 45%. All other patients and the controls had normal LV systolic function. The coronary sinus flow velocity in controls varies between 6.1 – 14.2 cm/s. The coronary sinus flow velocity in CAD patients varies between 2.2- 7.4cm/s. Females were found to have decreased coronary sinus flow velocity compared to males in both CAD patients and controls.
Conclusion: To conclude, coronary sinus flow velocity by PW Doppler is found to be low in patients with LAD disease and can be used as an additional marker for significant LAD disease.

Right atrial volume index and prognosis in chronic systolic heart failure

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Background: The ability to visualize the right atrium in echocardiography allows a quantitative and highly reproducible assessment of the RA volume that can be indexed to body surface area to calculate Right Atrial Volume Index (RAVI). In the ADEPT study it was hypothesized that RA volume can serve as a quantitative marker of RV dysfunction severity. The study concluded that in patients with chronic systolic HF, RAVI is a determinant of right-sided systolic dysfunction and provides independent risk prediction of long-term adverse clinical events. The aim of our study was to see the relationship between RAVI and the prognosis in patients with chronic systolic HF as well as to study its relationship with different profiles i.e. age, sex, etiology of HF, NYHA functional class, LVEF, RV systolic function.
Method: Patients between 18 to 75 years of age with LVEF of $\leq$ 35% were included in this study. RA area was measured by TTE in the apical 4-chamber view at end systole using Simpson's method. Clinical follow-up was for 1 year. For prognosis, the primary endpoint was taken as the combined risk of hospitalization for acute HF episode or death.
Results: Total 57 patients were enrolled for the study. 7 patients were lost to follow up. The mean RAVI in our study group was 47.5 ±15 ml/m^2, increasing with worsening LVEF. RAVI showed no correlation with age (p= 0.918), sex (p= 0.393) or the etiology of HF (p= 0.449). In comparison to patients in NYHA class II, patients in NYHA class III & IV has significantly high RAVI. Increased RAVI was correlated with decreased LV systolic function as measured by LVEF (p= 0.001), with decreased RV systolic function as measured by TAPSE (p= 0.001) and with increased primary endpoint events (p= 0.005).
Conclusion: Our findings indicate that, in patients with chronic systolic HF, the RAVI may express the severity of RV systolic dysfunction and this quantitative echocardiographic marker can be used to identify patients with poor prognosis.